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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/675,116	09/28/2000	Grzegorz J. Czajkowski	SUN-P5075-RSH	9136

22835 7590 06/06/2005

A. RICHARD PARK, REG. NO. 41241
PARK, VAUGHAN & FLEMING LLP
2820 FIFTH STREET
DAVIS, CA 95616

EXAMINER	
ALI, SYED J	

ART UNIT	PAPER NUMBER
2195	

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/675,116	CZAJKOWSKI ET AL.	
	Examiner	Art Unit	
	Syed J. Ali	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-11,13-18 and 20-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-11,14-18 and 21-24* is/are rejected.

7)☒ Claim(s) *6,13 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 14, 2005 has been entered. Claims 1-4, 6-11, 13-18, and 20-24 are presented for examination.

2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Claim Rejections - 35 USC § 103

3. **Claims 1-4, 7-11, 14-18, and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gosling (USPN 5,668,999) in view of Jagannathan et al. (USPN 6,496,871) (hereinafter Jagannathan).**

4. As per claim 1, Gosling teaches the invention as claimed, including a method for verifying type safety of an application snapshot, the method comprising:

an application snapshot including a subprogram and a point of execution (col. 6 lines 28-46);

examining the application snapshot on the second computing device to identify the subprogram and the point of execution within the subprogram (col. 7 lines 31-44);

examining the subprogram on the second computing device to determine an expected structure of the operand stack at the point of execution (col. 7 line 10-65);

validating that the state of the application snapshot on the second computing device is consistent with the expected structure of the operand stack (col. 7 line 58-65);

verifying on the second computing device that variables and arguments within the application snapshot are of the proper type (col. 10 lines 16-55); and

if the state of the application snapshot is validated as consistent with the expected structure of the operand stack, executing the application snapshot on the second computing device (col. 10 lines 56-64).

5. Jagannathan teaches the invention as claimed, including a method for verifying type safety of an application snapshot, further comprising:

the application snapshot including a state of an executing program, partially represented by an operand stack (col. 17 lines 11-25), that is moved from a first computing device to a second computing device across a network in order to continue execution on the second computing device (col. 20 lines 45-55);

wherein the operand stack contains operands currently being operated on by the executing subprogram (col. 17 lines 11-25; col. 20 lines 45-55);

receiving the application snapshot of the executing program from the first computing device on the second computing device (col. 18 lines 4-23);

resuming execution of the application snapshot at the point of execution on the first computing device (col. 18 lines 4-23).

6. It would have been obvious to one of ordinary skill in the art to combine Gosling and Jagannathan since Gosling, while providing means for verifying an application before execution, fails to specify how migration of an application might be handled. Rather, the procedure for verifying an application snapshot is presented, but an assumption is made that once the program begins executing, it will continue to reside on that machine. With the advent of mobile code and distributed processing, a method of handling process migration during process execution is necessary, such that the execution state of a task is available. Additionally, since many networks are heterogeneous, verification across platforms is necessary. Jagannathan provides a system that allows dynamic process migration while also maintaining state information related to the ongoing execution. Jagannathan acknowledges that the problem of migration of ongoing processes has been addressed, but the prior art does not allow for state information related to those processes to be easily migrated (col. 4 lines 47-59). Jagannathan also indicates that process migration may occur between heterogeneous machines, indicating a specific need for a verification method, such as the one disclosed by Gosling (col. 18 lines 4-23). Jagannathan seeks to improve the prior art by not only providing a system that allows migration of ongoing processes, but also allows the state information to be migrated (col. 5 lines 28-35). The combination of Gosling and Jagannathan would provide an exemplary model for verifying the type safety of an executing application, while maintaining state information related to the application as it is migrated from one machine to another.

7. As per claim 2, Gosling teaches the invention as claimed, including the method of claim 1, wherein examining the subprogram to determine the expected structure of the operand stack at

the point of execution involves examining the subprogram with a code verifier, wherein the code verifier ensures that:

the subprogram does not cause the operand stack to overflow and underflow (col. 8 line 46 - col. 9 line 18);

a use of a local variable does not violate type safety (col. 10 lines 16-27); and

an argument of an instruction is of an expected type (col. 6 lines 6-13).

8. As per claim 3, Gosling teaches the invention as claimed, including the method of claim 1, wherein the operand stack contains at least one local variable, at least one argument that is passed as a parameter to the subprogram, and an offset to the point of execution within the subprogram (col. 5 lines 21-29; col. 6 lines 6-13; col. 6 lines 28-46).

9. As per claim 4, Gosling teaches the invention as claimed, including the method of claim 2, wherein the expected structure of the operand stack includes a collective size of entries and the types of entries expected on the operand stack at the point of execution within the subprogram (col. 7 lines 20-30).

10. As per claim 7, Jagannathan teaches the invention as claimed, including the method of claim 1, wherein resuming execution of the application snapshot involves restarting the subprogram at the point of execution within the second computing device (col. 18 lines 4-23).

11. As per claim 22, Jagannathan teaches the invention as claimed, including the method of claim 1, further comprising restoring the state of an object within the application snapshot on the second computing device by changing a pointer from an address of the object on the first computing device to an address of the object on the second computing device (col. 21 lines 7-27).

12. As per claims 8-11, 14-18, 21, and 23-24, Gosling teaches the invention as claimed, including an apparatus including a computer-readable storage medium storing instructions that when executed by a computer causes the computer to perform the method of claims 1-4, 7, and 22 (Fig. 2).

Allowable Subject Matter

13. **Claims 6, 13, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (571) 272-3769. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Syed Ali
May 17, 2005

MENG-AL T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100